

Date: Wednesday, 1/23/2008 11:27:23 AM
 User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : SA 315B LAMA SKID ASSY LH
 Job Number : 36899
 Estimate Number : 12827
 P.O. Number :
 This Issue : 1/23/2008 S.O. No. :
 Prsht Rev. : NC Part Number : D315668011
 First Issue : 1 / Type : LANDING GEAR Drawing Number : D2904 REV A B
 Previous Run : 36898 Drawing Revision : AB 08/01/23
 Material :
 Due Date : 2/10/2008 Qty: 1 Um: Each
 Written By :
 Checked & Approved By :
 Comment : Est Rev: A New Issue 07-04-12 JLM

Additional Product

Job Number:



Seq. # Machine Or Operation: Description:

1.0 DC DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile & type labels per PPPD315-668-011

CHG 001

08.01.31
 286501 *

2.0 D2904B 315 Skidtube Ext. (Bent)



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

315 Skidtube Ext. (Bent)

Batch: B36926

DP 8-4-17

3.0 D2910 Doubler (Lama Skid)



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Doubler (Lama skid)

BATCH: B31827

DP 8-4-17

4.0 D2911 Doubler (Lama Skid)



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Doubler (Lama Skid)

BATCH: B36928

DP 8-4-17

5.0 D2912 Doubler (Lama Skid)



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Doubler (Lama Skid)

BATCH: B36929

DP 8-4-17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Cut D2904b to length as per dwg D2904

2-Drill aft and fwd cap holes as per dwg D2904 using DT8025 jig
(DO NOT OPEN TO FINISH SIZE)

3-Drill saddle holes (6 Deg) as per Dwg D2904 using DT8938A jig
(ENSURE THAT LOCATOR RING IS SET FOR LH TUBE)

4-Drill GHW holes (3 Deg) as per Dwg D2904 using DT8938B jig
(ENSURE THAT LOCATOR RING IS SET FOR LH TUBE)

5-Insert and cleco doublers and DT8938d in position. Transfer all 256 holes thru tube and doublers.

6-Remove doublers and identify batch# and orientation

7-C'sink Rivet holes 256 places as per Dwg D2904 and deburr

8-Locate from saddle holes, drill wearplate holes using DT8217. Jig must be 1.7" from aft end of tube
(REF)

9-Remove fwd and aft indexing ridges as per dwg D2904. Open fwd and aft cap holes to finish size, scribe
batch# at aft end of tube.

10-Remove marks left from drill jig and deburr

7.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

2 00/04/17 (41)

8.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat *****Tube & Doublers *****as per QSI 005 4.1

2T 08 04-17

W/O:		WORK ORDER CHANGES					
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Job Number: 36899

Part Number: D315668011

Job Number:



Seq. #:

Machine Or Operation:

Description :

9.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

BE 08-04-22

10.0

MS20601AD4W3

Rivet



Comment: Qty.: 256.0000 Each(s)/Unit Total : 256.0000 Each(s)

Rivet

BATCH: 1106993

256

BT 8-4-25

11.0

D2905

Web (Lama)



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Web (Lama)

Batch: 12946

BT 08-04-22

12.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Remove alodine around X-Bolt holes on doublers

2-Rivet doublers as per Dwg D2904.(DO NOT INSTALL RIVETS AROUND X-BOLT HOLES AT THIS TIME)

3-Open X-Bolt spacer holes to finish size as per dwg D2904.(DO NOT USE CUTTING FLUID)

4-C'sink and deburr X-Bolt spacer holes, prepare for Welding.

5-Blow all chips from inside tube

6-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting

Pick:

Qty Part Number Description Batch

A/R Sikaflex-291 107804

Sikaflex expire date: 08-10-01

Start Time: 1:00 Date: 08-04-22

Fin Time: 8:30am Date: 02/01/25

BT 08-04-22

BT 8-4-21

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Seq. #:

Machine Or Operation:

Description:

13.0

D2909

Spacer (Lama)



Comment: Qty.: 11.0000 Each(s)/Unit Total: 11.0000 Each(s)

Spacer (Lama)

Batch:

B12947 BE 08/04/24

14.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Weld crossbolt spacers D2909as per Dwg. D2904and QSI 004.

For D2579 spacers, weld one side, pass Y" drill, weld other side, pass Y" drill

A/R

Aluminum Rod

M106330 BE 08/04/24

2-Grind welds as per Dwg D2909

3-Install remaining rivets around X-Bolt spacer, use rivet shaver as necessary

25-4-25

4-Deburr,inspect tube for any visible scratches

15.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/04/25

16.0

QC5

VISUAL WELDING INSPECTION



Comment: VISUAL WELDING INSPECTION

08/04/25

17.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Pressure wash as per QSI 005

M-1

08/04/25

*136899
D315668011
30/04/2008*

18.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

M107550

08-04-30

*S.154 07.25
#1 322.8 F
#2 --- F
#3 30mins F
#4 --- F*

19.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Wing Walk as per Dwg D2904 and QSI 005 4.4

Batch:

N/A

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Job Number: 36899

Part Number: D315668011

Job Number:



Seq. #:

Machine Or Operation:

Description :

20.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

FL 08/04/30 P

21.0

D2646

Aft Cap



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Aft Cap

Batch: B37755

FL

22.0

D26483

Wearpad



Comment: Qty.: 5.0000 Each(s)/Unit Total : 5.0000 Each(s)

Wearpad

Batch: B34591

FL

23.0

D265613

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Wearplate

Batch: B38110

FL

24.0

D265633

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Wearplate

Batch: B36625

FL

25.0

D2907

Wearshoe (Lama)



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Wearshoe (Lama)

Batch: B14624

FL

26.0

ALS41032130

Insert



Comment: Qty.: 50.0000 Each(s)/Unit Total : 50.0000 Each(s)

Insert

Batch: B m105855 (x18) m105819 (x42)

FL 08/04/30 D

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Job Number: 36899

Part Number: D315668011

Job Number:



Seq. #:

Machine Or Operation:

Description :

27.0

AN960JD10L

Washer



Comment: Qty.: 54.0000 Each(s)/Unit Total : 54.0000 Each(s)

Washer

Batch: m104885

FL

28.0

MS27039108

Screw



Comment: Qty.: 54.0000 Each(s)/Unit Total : 54.0000 Each(s)

Screw

m107378

FL

29.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

1-Install inserts & wearplates as per Dwg. D2904. Use a drop of Sikaflex on insert holes before installing wearplates

A/R Sikaflex-291 m107804

Sikaflex expire date: 08/10

3-Inspect for foreign object per QSI 024

4-Install 2646 Aft & fwd Caps as per Dwg D2904 and seal with Sikaflex. Clean excess adhesive

A/R Sikaflex-291 m107804

Sikaflex expire date: 08/10

5-Wing Walk as per Dwg D2904 and QSI 005 4.4

m107380

Batch:

FL 08/04/30 (1)

FL
08/04/30 (1)

30.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/05/01 (2)

31.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D315-668-011

Location: A

PPP Rev: A

9/5/11

SD

14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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Job Number: 36899

Part Number: D315668011

Job Number:



Seq. #:

Machine Or Operation:

Description :

32.0

QC21

FINAL INSPECTION/W/O RELEASE



08/05/05

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



mf 08-05-02

36899

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN CP	DRAWN BY CP	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D2904	Rev. B SHEET 1 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY SCALE NTS	
A	99.09.09	NEW ISSUE	
B	00.06.21	CHANGED ANGLES FOR HOLES	

PARTS LIST:

Qty -041	Qty -042	Part Number	Description
X		D2904-041	LH SKIDTUBE ASSEMBLY
	X	D2904-042	RH SKIDTUBE ASSEMBLY
2	2	D2646	CAP
4	4	D2648-3	WEARPAD
1	1	D2648-5	WEARPAD
1	1	D2656-13	WEARSHOE
1	1	D2656-33	WEARSHOE
1		D2904-1	SKIDTUBE
	1	D2904-2	SKIDTUBE
1	1	D2905	WEB
1	1	D2907	WEARSHOE
11	11	D2909	CROSS BOLT SPACER
2	2	D2910	SKIDTUBE DOUBLER
2	2	D2911	SKIDTUBE DOUBLER
2	2	D2912	SKIDTUBE DOUBLER
50	50	ALS7-1032-130 or AKS4-1032-130 or ALS4-1032-130 or ALS7-1032-130	INSERT
54	54	AN960JD10L	WASHER
256	256	MS20601AD4W3	RIVET
54	54	MS27039-1-08	SCREW

SHOP COPY
RETURN TO
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WORK ORDER
NO. 36899

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00.07.01 [Signature]

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DESIGN CP	DRAWN BY CP	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED JH	APPROVED JH	DRAWING NO. D2904	Rev. B SHEET 2 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY	SCALE 1:20

GENERAL NOTES:

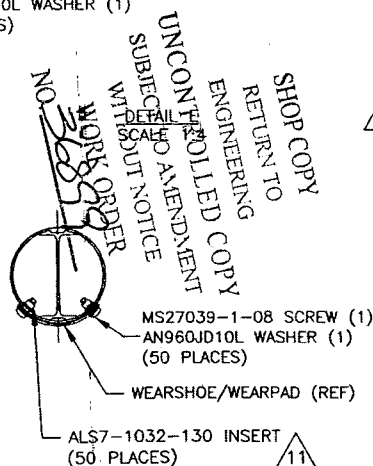
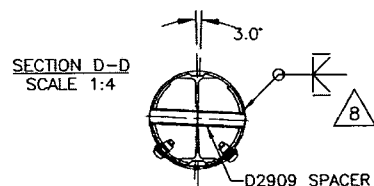
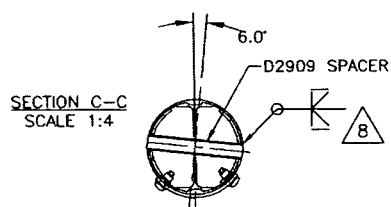
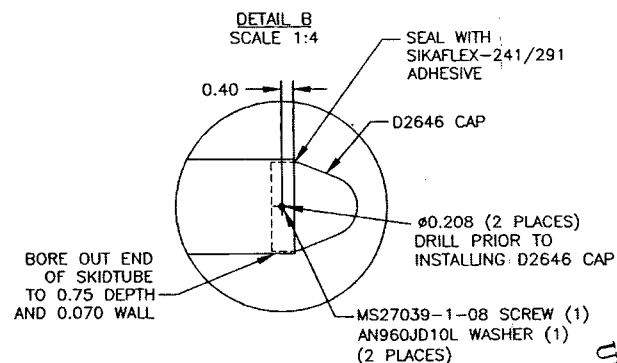
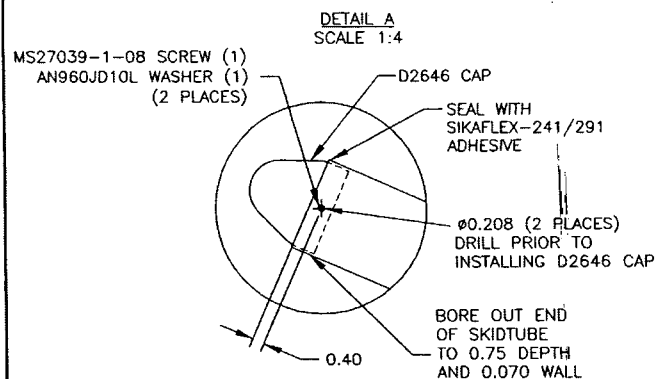
1. TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
2. MAKE D2904-1 AND D2904-2 FROM D2914 EXTRUSION (INITIAL LENGTH = 142.0).
3. DAMAGE TOLERANCE ON BENDING:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 7 INCHES ABOVE THE GROUND. NO GOUGING IS ACCEPTABLE IN THE FLAT PORTION OF THE TUBE. GOUGES UP TO 0.020 ARE ACCEPTABLE IN THE BENT PORTION OF THE TUBE. TUBE O.D. SHOULD BE 3.150 ± 0.010 IN THE FLAT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
4. ALL HOLES DRILLED ON CENTERLINES EXCEPT THOSE NOTED BY SECTION C-C.
5. DRILL #30 HOLES ($\varnothing 0.128$ REF) TO LINE UP WITH $\varnothing 0.128$ HOLES IN D2910/D2911/D2912 DOUBLERS. C'SINK $\varnothing 0.239 \times 100^\circ$.
6. BOND D2905 WEB INTO D2904-1 (OR D2904-2) OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/291 ADHESIVE PER DART QSI 015. ENSURE HOLES LINE-UP.
7. WELDING TO BE DONE PER DART QSI 004.
8. AFTER DRILLING, BENDING, AND INSTALLING WEB & DOUBLERS, PERFORM THE FOLLOWING FOR $\varnothing 0.500$ HOLES ONLY:
 - CHAMFER HOLE $0.050 \times 45^\circ$
 - INSERT D2909 SPACER (11 PLACES)
 - WELD INTO PLACE
 - GRIND FLUSH
 - DRILL OUT SPACER TO $\varnothing 0.406$
9. FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
 - MINIMUM YIELD TENSILE STRENGTH = 35 ksi
 - MINIMUM ULTIMATE TENSILE STRENGTH = 38 ksi
10. FINISH:
 - ACID ETCH, ALODINE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2905 WEB AND D2910/D2911/D2912 DOUBLERS.
 - POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
 - BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
11. DRILL $\varnothing 0.297$ FOR ALS7-1032-130 INSERT USING DT8395 BEFORE FINISH. INSTALL ALS7-1032-130 INSERTS AFTER FINISH.

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WORK ORDER
NO. 36899

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00.04.01

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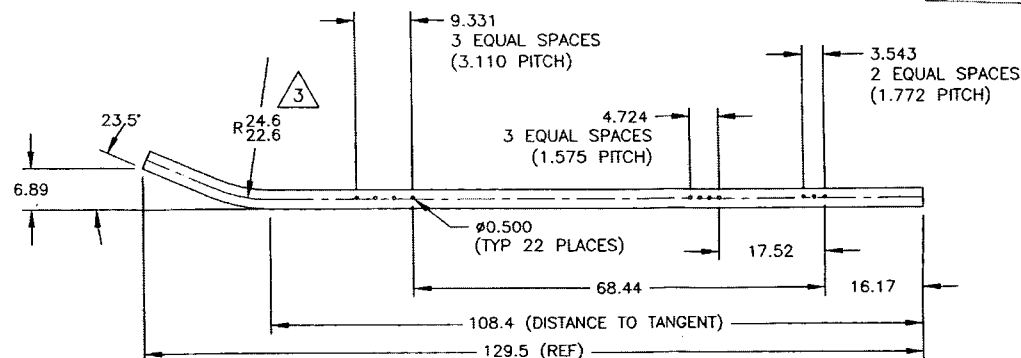
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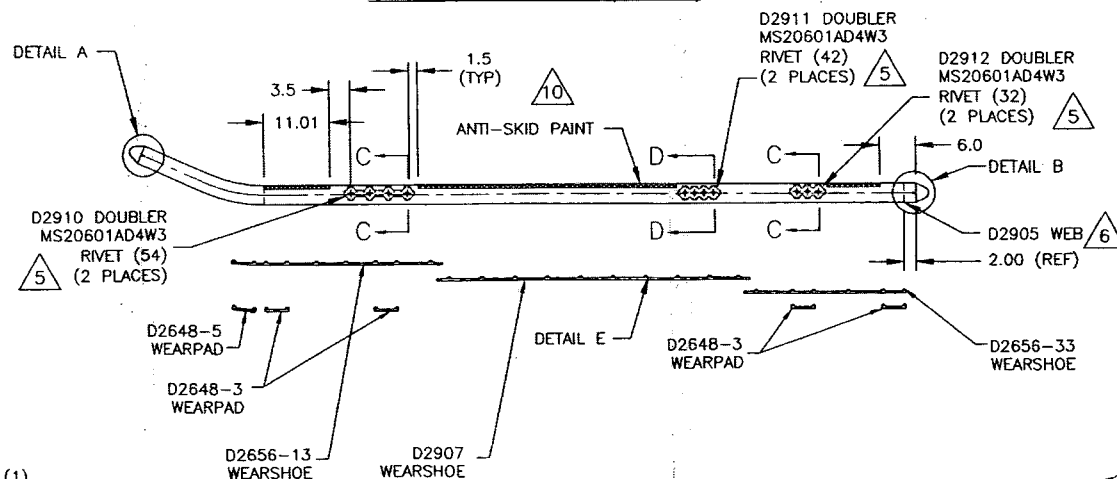
D2904-1 BENDING/DRILLING DETAIL (SHOWN)
D2904-2 BENDING/DRILLING DETAIL (OPPOSITE)

2

RELEASED
00.04.01



D2904-041 LH ASSEMBLY DETAIL (SHOWN)
D2904-042 RH ASSEMBLY (OPPOSITE)



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DATE
00.06.21

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UP

APPROVED
#

DART DART AEROSPACE USA, INC.
BELLINGHAM, WA

DRAWING NO.
D2904

TITLE
SA 315B SKIDTUBE ASSEMBLY

REV. B
SHEET 3 OF 3
SCALE
1:20

NO. 152

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Eliot
Job number: B36879
Part number: A315668011
Description: Skid tube (Lame)
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier David [Signature] Date of Test Coupon 08/04/24
Welder Barclay Eliot Date of Test Coupon 08/04/24

The above named individual is qualified in accordance with AWS D17.1.2001 to weld